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The Truly Practical Man, Necessarily an Educated Man.

ORATION

DELIVERED AT THE

COMMENCEMENT

OF THE

COLLEGE OF CALIFORNIA,

WEDNESDAY, JUNE 5, 1867.

By PROFESSOR BENJAMIN SILLIMAN, M.A., M.D.

PUBLISHED BY THE TRUSTEES OF THE COLLEGE.

SAN FRANCISCO:

Towne & Bacon, Book and Job Printers, Excelsior Office,

No. 536 Clay Street, just below Montgomery.

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ORATION.

We live in a practical, matter-of-fact age. The universal cry is for practical men. Modern philosophy, in harmony with the times, is experimental—rejects mysticism, tends to rationalism, and deals chiefly with great material questions. It demands leaders and laborers whose intellectual habits have been moulded in the schools of experience; and the tendency is everywhere seen to subordinate, almost to ignore, those studies and pursuits which do not, to the popular understanding, appear to keep step with what is called the march of improvement.

Success is accepted as at once the test and the measure of ability, whether we speak of the triumphs of the forum, the cabinet, the sacred desk, the pursuits of commerce and industry, or whatever department of intellectual labor is taken as the standard of comparison. We cannot object to the judgment which is rendered upon this issue, provided the success is a genuine fruit of labor and talent, combined with the training of experience, and is not the offspring of a lucky accident. Mankind never fail to appreciate him who has at once the power and the disposition to serve them in whatever sphere of usefulness or honor he may elect. Just in proportion to his power and willingness to serve will he be used. It matters not whether he makes bad poetry or bad bargains, society has no use for such, and the unfortunate author of either is left in merited obscurity.

If it is true that *Poeta nascitur non fit*, it is not the less true that *Orator fit non nascitur;* and with the orator we may class all

men who achieve success and eminence as the result of labor and study, and the culture which comes from the practice of an art founded in well defined and carefully inculcated principles.

It is equally idle and unwise to quarrel with the spirit of the times in which we live. The causes which have developed the existing state of public opinion lie far back in the history of intellectual and moral development, and their discussion is foreign to our present purpose.* We accept what we find. It may be too materialistic, too prone to measure results by the vulgar standard of *cui bono*. Grant that its tendency is to sink below their proper value those studies which the experience of ages has shown to be well calculated to train the powers of the human mind to their highest development; that it exalts art into the temple of science, and encourages the youth to seek in the attractive fields of nature for a short cut to the attainment of that goal which is to be reached, if at all, only by the well-worn paths of patient study. This evil, so fatal to scholarship and intellectual growth, will cure itself. All will learn, sooner or later, that there is no royal road to learning and eminence. Everything worth having costs something in labor, or its equivalent. Even the free gifts of nature are appreciated only by those who have the sagacity to see and the industry to appropriate them. Water falls by gravity only as the equation of solar force. The sun gives light as the correlate force of molecular vibrations, resulting in motions which are either heat, light, or electricity, as they are modified by material conditions. Man is not the better for these, or any natural bounty, except as by the use of his own well disciplined intellectual powers he combines and appropriates them. It is at once the glory and reward of an advanced civilization, and of an intelligent appreciation of man's relation to nature, to place him in a position to achieve those triumphs which have been reserved for the advance of the inductive philosophy.

> "Were nothing sunlike in the eye,
> How could we light itself descry?
> Were nothing Godlike in the mind,
> How could we God in nature find?"—GOETHE.

In considering this subject, let us ask ourselves how far we may

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* See *Lecky*—History of the Rise and Influence of Rationalism in Europe. *Draper*—Intellectual Development. *Buckle*—History of Civilization.

mould our systems of scholastic learning to meet the demands of the age. Let us determine whether all classes of minds are to be put on the same intellectual rack. Whether Latin and Greek—important as they are—are the only means of developing those critical habits of analysis, comparison, and memory, upon which all good scholarship rests. Whether the history of Greece and Rome alone deserve the exclusive attention of scholars and gentlemen, in whose hands are placed, or are to be placed, the destinies of a continent teeming with new problems, social, political, physical. Whether the quantity of a Greek hexameter is of more moment than a clear knowledge and free use of that noble mother tongue, whose powers lie deep in the wells of English undefiled, or of those cognate Indo-European languages which form the speech and embalm the literature of the most cultivated nations of modern Europe. Whether the polity and social order of the classical nations of antiquity is more important than a knowledge of the principles of international law, and of the origin and progress of the American Constitutional Governments. Demosthenes was, beyond dispute, the great master of oratory, as Homer of verse; but does our intercourse with these noble minds of old excuse our want of familiarity with Burke and Webster, with Milton, Goethe, and Shakspeare? Euclid has demonstrated, for all time, the fundamental problems of geometry; but shall we, therefore, content ourselves in our colleges with an application of his solutions to a few familiar examples in mechanics, falsely calling it natural philosophy, while the splendid achievements of modern physics are almost ignored? Can we wonder that our college-bred sons are lightly esteemed, when they are not prepared to solve intelligently the simple problems which are presented to them by the miner, the millman, the assayer, or the manufacturing chemist? If we cannot excuse the self-conceit of the so-called practical man who conceals his ignorance beneath his empiricism, neither can we pardon the college which has turned out its graduate in arts so artless that his learning fails him when brought face to face with nature and experience.

These and similar inquiries force themselves on our attention whenever the question of collegiate or university education comes up for discussion, and they must be met. Already they occupy

the serious attention of law-givers, educators, and the benevolent founders of endowments, and have made themselves felt in the modification of the curriculum of study of the most conservative colleges.

Time was when all learning was with the clergy, and all the forms of scholastic training were moulded under a theological influence. Over the doors of such institutions might well have been inscribed those lines, inspired by the same sentiment, which old John Davenport caused to be engraved upon his own tomb—

> "None but the priests—the sacred tribes,
> And those whom heavenly wisdom guides,
> May to this shrine resort," etc.

But all this is changed. The Assembly's Catechism is no longer propounded in Greek by the college President every morning at chapel, to be answered by the student in Latin.* All the solemn pedantry which compelled all students to address college officers only in Latin, and to uncover—without respect to the weather, but with the utmost respect to official authority—in presence of any officer, are among the pleasing traditions of an earlier age. If there is less show of respect for official authority, there is less show of authority itself; while the nobler sentiment of Bacon is accepted as the expression of the inspiration of modern science—"*Homo naturæ minister et interpres.*"

The older institutions of learning, both in this country and Europe, have made, as we have already intimated, important, if not rapid progress in the modification or in the extension of their curriculum of study, with a view to meet the change in public sentiment. This is seen in the addition of new chairs in the physical and exact sciences—or in the extension of the range of those previously existing—and more still in the engrafting of new schools of science, philosophy, and the arts, upon the old stock of the parent institutions, expanding their scope in a few cases to the proper dimensions of a university. The enlargement of the range of study—opening up in many cases fields hitherto untried by or unknown perhaps to educators—has been followed by a hearty re-

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* This was the habit at Yale certainly as late as 1760, and probably later.

sponse on the part of those who have before sought in vain for the door of entrance to the arcana of knowledge in certain directions which have been hitherto practically inaccessible.

In every new community where in the sharp struggle for wealth or for the means of existence each adventurer is everything by turns and nothing long, it follows, almost as a matter of course, when each man considers himself as good as his neighbor—perhaps a little better—that learning falls into neglect or some measure of disrespect, while ignorance and empiricism, assuming the garb of knowledge or the practice of art, with the true spirit of quackery, presumes to arrogate to itself the honors, having already attained the emoluments, of a professional knowledge. However we may be amused or annoyed by turns, there is nothing in this state of affairs which ought either to surprise or alarm us. If the muddy pool appears profound, its shallowness is betrayed when the particles which obscured it are precipitated to the bottom, where they are sure to go if left alone. If in a well ordered community one needs boots or a coat, he does not order the one of his baker or the other from his carpenter. But in all young and formative communities, and especially in such a one as was extemporized in California, it happens almost of necessity, that men must presume to do what they *must* do to avoid starvation, nakedness, or other evils. This rule of necessity, which compels the lawyer to drive a team for want of a brief, or turns the college professor into a vendor of pies and coffee for want of students, may be very democratic, but it will be of short duration; although the contempt for learning which accompanies such an abnormal condition of society, may linger long after the organization of society itself has become in a good degree well regulated. The fate of one of Napoleon's philosophers, taken prisoner by the Algerines, who found use for all the arts and trades represented in the ship's company, but could divine no use for the student until he described himself as a person of sedentary habits, when he was immediately provided with feather breeches and set to hatch eggs, may serve as an illustration of the estimate placed upon intellectual pursuits in a community where men are chiefly occupied by the struggle for existence and the calls of natural necessity.

Every community founded by the emigration or association of considerable numbers of people of the same class, carries with it an

impress of its origin which is well nigh indelible. The Dutch phlegm of the aristocratic Knickerbockers, the quaint quietude of the Quakers of Pennsylvania, the polished manners of the early *noblesse* of Maryland and Louisiana, the inflexibility of virtue and zeal for religious truth of the Puritans of New England, the dash and military tastes of the Cavaliers of Virginia, and the refined piety of the Huguenots of South Carolina, are seen in the family likeness of their descendants. This phenomenon is seen also in the smaller circles of counties and townships, where its influence becomes even more noteworthy. If we study the history of American statesmanship, generalship, or letters, we find it true in regard to many of our eminent public men that they have sprung directly from the stock of one or the other of the several colonies here enumerated, illustrating the familiar adage that "like produces like," and that the human family are subject to the laws of physical and intellectual descent which are known to work in the blood of inferior races.

There is in the history of California since the dawn of its age of gold, the most remarkable example in modern times of the sudden development of a great and prosperous State out of a distant pastoral province lately acquired from a foreign power. For unity and intensity of purpose, for activity, energy, enterprise, fortitude in bearing hardships and dangers, it is probably without a parallel in the history of modern civilization. Placed between latitudes within which exist in admirable combination all the conditions essential to the highest development of the human faculties, and the energies of the muscular system; blessed by a climate of wonderful equality, adapted to all descriptions of open air labor, whether in agriculture, mining, or the mechanic arts; with a soil of unsurpassed fertility, and growing—from the cooler regions of Oregon to the burning furnace (*Caliente-forna*) of the South—all the productions of temperate and semi-tropical latitudes, famed long ago for its countless herds of cattle and bands of horses ranging over boundless plains, careless of human training; wonderful in its topography—its interior valleys, its coast ranges of subordinate mountains, its serried crests and lofty masses of the Sierra Nevada, falling hardly below the line of perpetual snow, rich beyond example in its precious and useful metals, and varied mineral products—washed by the greatest

of oceans, but accessible with daily increased facility by the trans-continental route once deemed so impassable—California occupies an unrivaled position crowned with countless blessings by gift of nature; she welcomes the enterprise, the virtue, and the intelligence of all lands, offering an asylum and the promise of wealth to all; and, as she repeats to the East the old verse of Berkeley, "Westward the course of empire takes its way," she sounds into the dull ears of the ancient life of Asia the battle-cry of human FREEDOM and progress.

From the combination of such elements of power and progress, we have the right to expect great results for humanity; nor shall we be disappointed. So long as California produced and exported almost exclusively the precious metals, importing nearly all the ordinary articles of consumption as well as most of the luxuries of life, the development of her other resources was slow. But the progress of the State in wealth, intelligence and population has now placed society on a basis of greater stability. The introduction of railways begins already to open up agricultural resources before unavailable, and invites to fertile farms and prosperous homes a new class of settlers, whose presence insures stability, intelligence, and a varied industry. Manufactures naturally follow in the train of social and agricultural development, and it is easy to see the importance which this series of changes assumes, in its effect upon the immediate future of the State. The general fall of the rates paid for the use of money bears testimony to the accumulation of capital, and points significantly to the new avenues of prosperity which are thus made available to all who choose to enter upon them.

It is plain, even to a person not professionally commercial, that the city of San Francisco is fast assuming a position essentially cosmopolitan, as the center of lines of great power and influence in the affairs of the world. We cannot overlook the remarkable future which seems now to be almost a present reality in her Oriental relations, so novel to our American ideas. It appears that already she has given pause to the long-established course of commercial exchange, and that the silver which has found its way hitherto by London or Paris to the East Indies, is now rapidly changing its course in favor of a direct communication with China and India.

Accustomed to regard the Oriental nations as equally impassive and inflexible, we hardly know yet how to understand the demand which is springing up for our American woolens, wheat, and quicksilver among the Celestials and the inhabitants of Japan, nor have we sufficiently weighed, perhaps, the vast reserved force which rests in a population of eight hundred millions of people, or what an impression the *vis viva* of that reserve may create in all commercial and industrial channels of the world, should it move, even slightly, in the direction of a consumer of even a few products of our industry. A policy at once humane, just, and friendly towards the governments of China and Japan has not failed to secure for American commerce in those countries what has hitherto been denied to other nations. The advantages thus gained we must be careful to preserve and extend. As a commercial center, destined to be second on this continent only to New York, the question occurs: What shall be done to provide for the growing intellectual wants of the city and State? The absorbing demands of an intense materialism have hitherto blinded the eyes and deadened the ears of the community in a great degree to their duties in this direction. It becomes, therefore, the business of the educated men of the State to consider maturely and provide wisely for those demands, that the fruits of intelligence, culture, and virtue may be equal to the material prosperity which already smiles on the Golden State.

Standing here on the vantage-ground of the world's experience in physical, intellectual, and moral progress, we may with profit review its history in search of those lessons which experience offers as applicable to our conditions.

The establishment of Universities—as at Bologna, Padua, and Paris, in the thirteenth century—the invention of printing in the middle of the fifteenth, and the discovery of America at the close of the same century, conspired to hasten forward the revival of letters and art, which had already commenced in the eleventh century, and to make this period of modern history more famous than anything since the best days of the Roman Empire. During all the period of the Middle Ages, we find no progress in the physical sciences, and but little advancement in any department of human learning. The inductive methods, clearly recognized by some of the older philosophers, seem to have been forgotten, or had come to

be absolutely stationary, during the middle ages, when dogmatism and mysticism took the place of that clear perception of truth, the firm grasp of which is essential to the progress of science. Hence we find indistinctness of ideas in all departments of learning, which is the fruit, if not the cause, of the want of an exact use of terms as connected with, and expressive of a precise knowledge of facts and phenomena. It is curious to note how completely at sea the ablest minds of this period were, whenever they attempted to reason upon the most familiar facts of ordinary observation. When "hydrostatical *paradoxes* were proved and illustrated by experiment," and it was seriously argued that "levity is a positive quality of bodies, as well as gravity," and that "heavy bodies must fall quicker than light ones." The controversy of the Aristotelians with Galileo in the seventeenth century, when from the leaning tower of Pisa he demonstrated the fallacy of the latter proposition by actual experiment, was closed by the argument still in use whenever a favorite assumption is overthrown by facts,—well, "so much the worse for the facts." But gradually the dogmas of the days of mysticism have one by one fallen before the light of truth. The supposed influence of planets upon the fate of men at birth, which serves now to create a smile, or adorn a fiction, was for ages the firm belief of the strongest and sharpest intellects as well as of the popular masses. Even Bacon, often called the father of the inductive methods, could not completely purge his mind—great and small by turns—of the superstitions of his times, and his ill-concealed belief in astrology is in harmony with his crude lists of *materia medica*. Let us not arrogate to ourselves great superiority over those times of old, for the human mind is ever open to the secret misguiding influence of mysticism—is always more chameleon-like than independent, and invariably takes form and color from surrounding influences. We make ourselves merry over the delusions of mediæval alchemy, but we need not go beyond the Golden Gate to find a repetition of the same phenomena—under our own eyes—when we see in open court a modern Raymond Lully, with his "invisibles," magnetizing the gold from the grasp of those whose ancestors drank, under the wrath of Moses, the dust of the golden calf.* Nor was the effort of

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* Case of Hobson, San Francisco, May, 1867.

the alchemists to convert the baser metals into gold by any means so absurd, in view of the state of knowledge at the time, as the persistent efforts we have all witnessed in these regions, and which are daily repeated, to solve some of the difficult chemical problems of practical metallurgy, by various ingenious mechanical contrivances. Whenever men abandon the strict methods of patient investigation, and follow the promptings of the imagination or the suggestions of hope, in place of facts and the principles drawn from them, then the day of empiricism and quackery begins, tables turn, mediums communicate messages from the illustrious dead in execrable English, astrologers prophesy, and alchemists with magisteries convert iron into gold, or extract the precious metals from their chemical combinations by mechanical methods. But happily, we live at a time when all are ready to concede the value of knowledge—when, thanks to the general training of a good common school education, the masses of men everywhere are able to see and appreciate, to some extent, the advantages of superior culture, and the learned man is no longer in danger of being an object of aversion or suspicion to the vulgar, nor does he stand in need of the protection which in the seventeenth century called forth from Naudæus, a learned Frenchman, "An apology for wise men."

By the admirably digested law of 1866, the People of California in their "Act to provide for a system of Common Schools," * have laid the foundation and set up the framework of the best system of general common school education for the whole people which exists in any State or country where the English language is spoken. If the compulsory system of Prussia is more mandatory, we should hesitate long before exchanging for it the free scope of our own. Your distinguished Superintendent of Public Instruction † has done for the future of California what it rarely falls to the lot of any one man to accomplish—the moulding and training of the youthful minds of this and succeeding generations in the elements of a sound education upon a broad and liberal basis—rich in the best fruits of a long and successful experience drawn from all sources. The full measure of practical wisdom embodied in this organic Act can be seen in its best development only, as time crowns it with the fruits

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* Statutes of California, 1865–66, Chap. cccxlii, p. 383.

† John Swett.

of successful trial: it lays broad and deep the foundations of intelligence and virtue in the commonwealth. Education—meaning a symmetrical development of both the moral and intellectual powers of man—is by universal assent, in these days, the corner stone of the Christian State. Despotism, whether political or religious, is the only advocate of ignorance among the masses of mankind. It has tried its hand in all ages at the administration of human affairs, and with a success which has been generally in proportion to the absence of intelligence in the masses governed. The American system, whatever its defects may be, clearly recognizes and has ever done so, the duty of the State to foster and develop popular education—to make it possible for every man to secure the blessings of education in some important degree for his children. So clearly was the training of youth in the higher departments of learning recognized by the early colonists of the older States of America, that we find them enacting laws and imposing taxes at a very early day for the promotion of education and the endowment of colleges. It is needless here to repeat the familiar history of the early development of the educational plan of the older States, or to cite in proof of their recognition of their duties to posterity, the endowments, feeble almost to parsimony, which initiated the life of Harvard and Yale, of Hampden-Sidney, or William and Mary.

If it is true, as Cotton Mather asserts, that "God winnowed the chaff of the old world to obtain the few grains of wheat wherewith to plant the new," we must acknowledge in view of the early struggles of the older and now the most influential colleges of the Eastern States, that the soil into which the educational portion of these germs was cast, was for some generations not a hotbed—the tardy and stunted earlier growth of the system contrasting strangely with the vigor which marks its present development.

The experiences of these early colleges will not be repeated; the times are changed, and we are changed with them. Learning in those times, as has already been intimated, was mostly with the clergy. Colleges were regarded as schools of the prophets, or, like Dartmouth, were founded to convert the heathen. The country was poor, population sparse, the common school system undeveloped, the learned professions in the hands of the few, taxes reluctantly paid and often in kind; the arts had hardly begun to exist, cotton

and steam were unknown, not to name the discoveries of science and the wonderful combinations of capital and skill which have developed with such gigantic power the resources of the world in the nineteenth century.

Legislatures, more than the people who create them, are sensitive almost to jealousy of religious or sectarian bias in the control of public educational institutions drawing their support in any degree from the State. Avowedly a religious people, and declaring in our national Constitution liberty to all men to worship God according to the dictates of their own consciences, we seem as legislators, when it comes to the enactment of laws respecting education, practically to ignore the religious element, leaving matters of this sort to shift for themselves, with a latitudinarianism worthy of Pagan Rome.

The truth is, our English and American common law is essentially unchristian. While we draw our moral code from the Gospels, our civil code is Saxon and Roman—essentially Pagan.*

The 30th and final section of "An Act to establish an Agricultural, Mining, and Mechanical Art College," passed in 1866, by the Legislature of California,† declares that "the College shall not, in any manner whatever, be connected with, or controlled by any sectarian denomination." As there is no act of public worship of God possible to which the term "sectarian" might not be applied by some party of different belief, or of no belief at all, such an enactment would appear really to be equivalent to an absolute prohibition of all acts of worship whatever. The intent of the clause is obvious, but its practical working may be disastrous. This subject has excited much discussion in the older States, and it is instructive to observe its practical workings. In Massachusetts, where from the first the State had a voice in the administration of the affairs of Harvard College—originally the most orthodox of all colleges—she has within the last two or three years entirely withdrawn from the university councils, leaving the duties formerly exercised by the Overseers, representing the Commonwealth, to devolve by law upon the general body of the Alumni. The institution thus becomes an inde-

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* For a striking exhibition of this strange anomaly, see Mr. H. Dixon's "New America," chapter xli, "Domestic Law."

† Statutes of California, 1865–66, p. 509.

pendent organic whole, and having derived its funds in some small degree from the State, but far more from private benefactions, it is now wisely left to ordain and manage its own affairs, subject only to the high court of convention of its own peers, the Republic of Letters of its own Alumni. At Yale, the State has only a formal and never a controlling influence in the college corporation; the Governor and six senior members of the State Senate being, *ex officio*, members of the *Senatus Academicus*, but always a lay minority, the majority being, by the terms of its charter, ministers of the Congregational denomination. Practically, the religious complexion of these institutions exercises no undue influence on the students, who are at liberty to elect their own form of worship, always providing that they elect and adhere to some form. It is unavoidable, in the very constitution of human nature, that some form of religious belief should prevail. To meet this exigency, the Legislatures of Virginia and of Michigan have provided, at the Universities of those States at Charlottesville and Ann Arbor, that certain religious persuasions, named in the Act, shall, in rotation, and for a prescribed time, hold sway in each. But in the natural progress of development, arising from the demands of the times, and the increase of the means of instruction, the older institutions before named have evolved successively one Faculty, or body of instructors, after another, until the "College," which was originally confined in its scope exclusively to training young men for the ministry, and in belles-lettres, and mathematics, and to granting degrees in arts, has now become the nucleus of separate and distinct faculties of Arts, Law, Medicine, Theology, and Science—each faculty exercising a separate function, prescribing its own order of study, its conditions of examination, and enacting the by-laws under which its affairs are conducted: in short, maintaining a completely separate existence, except that all recognize a common President, who alone, under the authority of the General Board, has power to confer degrees. Thus, almost without the knowledge or consent of the parties interested, has the original idea of an American College been enlarged to the dimensions of a University.

The question of greatest practical importance in the educational affairs of California is, How shall a high collegiate or university system be developed here, and in what respects must it be modi-

fied to meet the wants of the situation and time? Something higher and broader than a common school system, as well as something more special and professional, must be provided, if we would have educated men trained to fill the high positions of responsibility and honor which the public duties and requirements of a great and growing community of intelligent American freemen demand. It is inevitable that in the progress of human development there should be a demand for men who, from their acquirements, talents, and position, are raised above the mass. If the average intelligence of a community is raised by the normal operation of a well-considered system of common schools, it becomes all the more important, as it is also the more practicable, that there be those who, by virtue of the power of a superior culture, may rise to a controlling influence in all departments of the State—civil, literary, scientific, military, commercial and religious. There is but one way in which this select class of controlling minds can be prepared properly for the high duties awaiting them, namely: by the establishment of a higher class of institutions of learning. If this subject has yet had but little attention in California, the cause is not difficult to assign, nor is the little progress made in this direction in any just sense a cause of reproach to the intelligence of her people. The time is now arrived when it must, and doubtless will, receive the attention which its importance demands.

The conditions of life in California have, up to a very recent period, been in some important respects quite peculiar and without a parallel even among what we call the newer States of the Union. The first emigration was, to an unusual extent, of young men in the vigor of life, without social ties, and fluctuating to an extraordinary degree. The arrival of the new comers for many years was almost equaled by the departure of those who had filled themselves with gold or disappointments, so that the actual increase of population in the State in 1863 over what it was in 1853 was far less than it had been in most of the Western States during the same period. Even to this day, a majority of adults whom one meets in California, and who have been here from what they call an "early day," speak of "going home" as soon as circumstances permit. Few, comparatively, act or speak as if they expected to identify themselves permanently with the fortunes of the State, or to die here. So long as

this is the case, we need not wonder that many things, and especially educational matters, have remained in a crude, undeveloped or unsatisfactory condition. The pioneer who moves his family to Minnesota or any Western State, carries with him all his worldly goods, and his family, if he has one, expecting to cast in his fortunes with the State of his adoption, he thus becomes at once interested in the permanent establishment of all the elements of prosperity and enjoyment—civil, political, material, educational, religious and social. The difference between such a citizen and one who expects to go "home" as soon as he has "made his pile," is so fundamental and conspicuous, that our wonder ceases when we contemplate it—or rather, is turned to surprise, that with this enormous drain on her resources, vital and material, the actual progress of California has been what we see to-day. But time, which solves so many problems and cures so many evils, is fast putting an end to this anomaly. The second decade of American life in California is approaching its completeness, and with it is coming up the goodly army of young Californians to the manner born, who have known no "home" but this; who are happy to call it home, and are blissful in their ignorance of the flesh pots of Egypt, after which the fathers yearn. To them this is a goodly country, whose sunny skies, golden-flowery plains, and snowy mountains offer ample scope and verge enough to fill the measure of youthful hope and ambition. For them your State has made bountiful provision in the common schools, where both sexes are furnished with the elements of knowledge by skilled professional teachers—the best paid body of educators in the world, and worthy of their reward.

But what has California done for that higher education which every community must provide for her sons, if it would have men properly trained for the learned professions, for statesmen, for arts and sciences? The Constitution of the State* distinctly recognizes the duty of the State to establish one or more Universities. Certain public lands have been set apart from the General Government for educational uses, but the proceeds of sale of these lands have thus far, I understand, gone exclusively to the support of Common Schools. No University Fund, or lands specially devoted to the uses of a University, exist.

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* Section two, Article IX.

The Act already alluded to, establishing an Agricultural College, does not contemplate a University. It is far too special and restricted in its provisions for this; nor was it so designed. Called forth specially to meet the exigency of securing to the State the benefits arising from the appropriation of public lands, under what is known as the "Agricultural College Bill," it appears to have been drawn up somewhat hastily, and fails to cover all the ground implied in its title; the course of instruction as set forth in the 13th Section being deficient in the omission of several important subjects connected with a good training in Agriculture, Mining, and the Mechanical Arts. From the mode of its organization this proposed Agricultural College is open to the much more serious objection, that it is ever subject to the fluctuations of party politics, than which nothing can be more fatal to the well-being of an institution of learning. It is also cut off from the advantages which in the older States have been found so valuable, arising from their connection with existing institutions of learning, whereby it is deprived of the aid to be obtained from the association of labor and capital, and the use of existing establishments if any such there were.

The State is, therefore, still without any provisions for the establishment of a University. No merely polytechnic or trades school —no simply professional school—is a University. Such schools if wisely ordered are extremely useful, and the pressing demand which is felt in this State for a good Mining, Mechanical, and Agricultural College may very likely for a time keep back the development of a State University, and obstruct the plans of those who seek to establish literary and scholastic institutions of a higher grade, like the College of California.

There is nothing so conclusive in life, as the teachings of experience. No arguments are so powerful to expose a false system as this test. Men who mistake the courage which rises to cope with great physical obstacles and the brute force of indomitable will for power and training, will be convinced of their errors only by the teachings of experience. As a people, we have a high conceit of our own powers. We have accomplished many wonders, and believe ourselves capable of achieving anything. A writer in a recent public journal, discussing the peculiarities of the American character, speaks thus;

"The ear of the public has been so stuffed with compliments to American enterprise, American self-reliance, and American practical talent, that the public has not yet discovered how incomplete and fragmentary is the practical side of our character. We are swift in all things, but thorough in very few. We are practical, it is true, up to the demands of our most pressing necessities, but beyond that point chaos begins."*

Few words are more thoroughly abused than the word *practical*. In its proper sense, of one skilled in the use or practice of an art or profession, we all accept it as of excellent meaning. But too often it is employed as an apology or cloak for ignorance or arrogant pretension—or is used as a weapon of offense against those whose knowledge it is designed to undervalue by the assertion that it is "theoretical," and not practical. It needs but little experience in the affairs of life to demonstrate the fact, that of all men, the so-called practical man—meaning one who has acquired an art without training or culture—is the greatest theorist, while the truly practical man combines the experience derived from the practice of an art with a competent knowledge of the principles on which it rests. There is a certain indistinctness of ideas and mental confusion on the part of many intelligent persons on this subject, which has its origin in a want of a clear notion of the fundamental difference between *art* and *science*. If we examine the records of invention, we find that art has generally preceded science; that we are indebted to the middle ages for the invention of printing, of paper, glass, gunpowder, the mariner's compass, algebra, and many other things of a like kind. Architecture at the same early period reached a point of beauty which it has never passed; so that a reactionist, reasoning against the claims of modern times to superior science and skill in the arts, might make a plausible argument in favor of the mediæval period. The proper answer to such an argument begins, "by distinguishing between art and science in the sense of general, inductive, systematic truth. Art is practical, science is speculative: the former is seen in doing; the latter rests in the contemplation of what is known. The art of the builder appears in his edifice, though he may never have meditated

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* Atlantic Monthly, April, 1867.

on the abstract propositions on which its stability and strength depend. The science of the mathematical mechanician consists in his seeing that under certain conditions, bodies must sustain each other's pressure, though he may never have applied his knowledge in a single case." * * * "Art is the parent, not the progeny of science; the realization of principles in practice forms part of the prelude, as well as of the sequel of theoretical discovery. Thus the inventions of the Middle Ages before alluded to, though at the present day they may be portions of our sciences, are no evidence that the sciences then existed, but only that those powers of practical observation and practical skill were at work which prepare the way for theoretical views and scientific discoveries."* If the practice of an art implied as a prior necessity to its skillful use a knowledge of the principles of science involved in it, what mechanician so learned as the juggler who balances on a pole, or the monkey who swings by his tail?

The same distinction obtains between *invention* and *discovery*, which is made between art and science. Many an invention of the greatest importance adds nothing whatever to the sum of human knowledge—does nothing to enlarge the boundary of scientific truth, and yet it may change the whole face of society. The discovery of voltaic electricity and of electro-magnetism preceded by many years the invention of the electro-magnetic telegraph, which involved no single fact or principle new to science, nor one which science had not long before presented to the free use of the inventor. He who devotes himself to enlarging the bounds of human knowledge must rest content too often with the fame which history is sure to award him, while the inventor applies the principles which the investigator has discovered, to enrich the domain of art or benefit mankind. It is the happy lot of modern science, however, often to combine in one these two functions, and the records of science give us illustrious instances of the union of science and art—of discovery and invention in one—of which the safety lamp of Davy and the discoveries of Daguerre and Talbot in sun-painting are in point.

Did time permit, I would here enter a plea in favor of the

Whewell—History of the Inductive Sciences. Vol. i, p. 333.

disciplinary value of scientific studies, as an element of intellectual training—comparing favorably with those other studies of a linguistic character which have hitherto occupied so. absorbing a place in collegiate life, and which must ever form part of a polite education. The methods of investigation in use in modern science, in the severity of the logic and inductions employed, in the patience and caution they demand, are surpassed in rigor only by the demonstrations of mathematics. The constant tendency is to place everything in science, as far as possible, upon a mathematical basis. The elements of quantity, motion and time find application even in the departments of general Natural History, while in Physics and Chemistry we see sciences formerly occupied chiefly with the exhibition of phenomena now well settled in mathematical exactness. The methods of investigation employed by science in the discovery of truth and in enlarging the bounds of human knowledge, are, of all known methods of intellectual exercise, those best calculated to train the mind to habits of close and patient observation, comparison and analytical weighing of evidence. The practical reformers in science, the men who first broke away from the mysticism of the mediæval times, appear to have been fully inspired with the spirit which should ever actuate searchers after truth. "They were modest, slow, despising no knowledge—whether borrowed from tradition or observation, confident in the ultimate triumph of science, but impressed with the conviction that each single person could contribute a little only to its progress—yet though thus working rather than speculating, dealing with particulars more than with generals, employed mainly in adding to knowledge, and not in defining what knowledge is, or how additions are to be made to it, these men, thoughtful, curious, and of comprehensive minds, were constantly led to important views on the nature and methods of science." *

This portrait by Whewell, of the practical philosopher of the early days of science, was obviously not drawn for the variety of that genius most commonly seen hereabouts! From what has been said, it must be evident that the truly practical man must be trained in the schools of experience and science: if he would cope with the

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* *Whewell*—Philosophy of Discovery, p. 105.

problems he is sure to meet, he must "despise no knowledge, whether borrowed from tradition or observation"—he must, in short, be an educated man.

California has never shrunk from any call of duty or of benevolence when its obligations have once been made evident. Her action in the case of the Sanitary Commission rescued that great charity at the critical moment from disaster, and stimulated other States to emulate her abounding liberality, which none of them ever equaled. Let it once be made clear to the minds of your legislators and men of wealth that there remains for them a great duty to perform, involving the welfare and happiness of the rising generation and of future ages, and the means will not be wanting to make the endowments essential to establish on a firm and sufficient basis either the College of California or a State University.

The same wisdom which has framed a law so catholic and ample as the Common School system, will not fail when applied to the development of the details of the University system, which is its logical sequence—its indispensable supplement and crown.

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